## Remarks

### I. Claim Objections

The Examiner objects to claims 6-8 "as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims." *July 18, 2006 Office Action*, at page 7.

The Applicant has amended claim 6 to include the limitations of base claim 17 and intervening claim 5. Claims 6-8 are now in condition for allowance.

### II. Claim Rejections – 35 U.S.C. § 103(a)

A. Claims 2-5, 9-13 and 17 are patentable over *Rajnik* in view of *Goldsmith*.

The Examiner rejected claims 2-5, 9-13 and 17 under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,077,436 ("*Rajnik*") in view of U.S. Patent 4,781,831 ("*Goldsmith*").

The Applicant has amended independent claim 17, and respectfully traverses the rejection.

Independent claim 17, as amended, is patentable over *Rajnik* and *Goldsmith* because the combined references do not disclose all the elements of amended claim 17.

"To establish *prima facie* case of obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art." M.P.E.P. § 2143.03, *citing*, *In re Royka*, 490 F.2d 981, 180 U.S.P.Q. 580 (CCPA 1974). "All words in a claim must be considered in judging the patentability of that claim against the prior art." *Id.*, *citing*, *In re Wilson*, 424 F.2d 1382, 1385, 165 U.S.P.Q. 494, 496 (CCPA 1970).

The Applicant respectfully contends that neither *Rajnik* nor *Goldsmith* disclose a housing with "a permeate circulation inlet port" and "a permeate outlet port," "where the permeate circulation inlet port and the permeate outlet port are configured such that substantially all of the

circulated permeate flows substantially through the entire length of the permeate chambers without encountering an egress to an external surface of the membrane element." In addition, the Applicant respectfully contends that neither *Rajnik* nor *Goldsmith* disclose a housing where the permeate channels or channel are proximate the end faces of the monolith.

*Goldsmith* discloses a cross-flow filtration device that "receives a feed stock at a feed end and the walls of the passageways conduct the filtrate to the filtrate conduits while passing the impermeable materials as retentate from a retentate end." *Goldsmith*, at col. 5, lines 58-62. *Goldsmith* does not disclose or suggest circulating a permeate flow, nor does *Goldsmith* disclose or suggest a permeate circulation inlet port. And, *Goldsmith* could not be used to accomplish the invention, even if one were to use *Goldsmith* with permeate circulation. The *Goldsmith* embodiment of Fig. 7 has permeate (filtrate) egress slots 188 only at the retentate end of the monolith; such slots allow the filtrate to leave the monolith. Obviously, with only one set of egress channels it would not be possible to circulate permeate. The Fig. 8 embodiment includes multiple sets of drilled holes along the length of the monolith, to allow the filtrate to leave the monolith at locations other than just the permeate end. Fig. 8 of *Goldsmith* is in this regard just like *Rajnik* (discussed below) in that the multiple, spaced egress points would prevent the device from being used in a manner in which substantially all of the recirculated permeate flows along substantially the entire length of the permeate chambers in the monolith. As the *Goldsmith* device cannot be used to practice the claimed invention, it teaches away from the invention and so cannot be used to reject the claims.

*Rajnik* discloses a filtration device with two sets of passages, "one set of passages is referred to as primary channels, and the other set is referred to as egress conduits," *Rajnik*, at col. 4, lines 10-12, with a series of holes for manifolding distributed along the surface of the

monolith. As shown in Figures 2 and 2A, "all of the primary channels 2, are shown adjacent to the exterior surface of the device, 3, or to the egress conduits 4...The means for manifolding are provided by holes, 5, drilled normal to the surface of the monolith. These holes penetrate into the interior of the monolith so that all of the egress channels communicate with the exterior. Flow of the filtrate occurs both through the egress conduits via the drilled holes and through the exterior surface of the extruded body." *Rajnik*, at col. 8, lines 55-65. Holes for manifolding are also shown in Figures 8 and 8a, reference 28; Figure 9, reference 30; and Figure 10, reference 34. Further, while not shown in any of the Figures, *Rajnik* mentions that the "egress conduits can also be equipped with means of providing a second gas or liquid. This second gas or liquid can be a sweep gas or a reactive gas or mixture." *Rajnik*, at col. 6, lines 39-43. *Rajnik*, therefore, does not disclose or suggest circulating the permeate flow.

If, as suggested by the Examiner, the egress conduits of *Rajnik* were equipped with "means for permeate introduction...and circulation," *July 18, 2006 Office Action*, at page 4, the circulated permeate would flow through the egress conduits, *through the holes for manifolding distributed along the surface of the monolith*, and out of the monolith. Clearly, then, the circulated permeate could exit the monolith at any point along the length of the monolith, through the holes for manifolding, *without* flowing through substantially the entire length of the monolith.

As such, *Rajnik* does *not* disclose a housing with a permeate circulation inlet port and a permeate outlet port "where the permeate circulation inlet port and the permeate outlet port are configured *such that substantially all of the circulated permeate flows substantially through the entire length of the permeate chambers without encountering an egress to an external surface of the membrane element.*"

Further, *Rajnik* does not disclose or suggest that the holes for manifolding are "proximate the end faces" of the monolith. As shown in *Rajnik* Figures 2, 8, 24, 25 and 26a, the holes are distributed along the surface of the monolith and distant from the end faces.

In summary, then, neither *Goldsmith* nor *Rajnik* disclose all the elements of independent claim 17, and as such, claim 17 is clearly patentable over the cited references. Claims 2-5 and 9-13, then, must also be patentable, since "[i]f an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious." M.P.E.P. § 2143.03, *citing*, *In re Fine*, 837 F.3d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988).

In the December 4th Advisory Action, the Examiner stated that the newly added material "without encountering an egress..." may raise a new matter issue. Applicant would like to take this opportunity to point out support for this language. Figure 1 shows egress slots proximate both ends of the monolith (slot sets 3 and 4). Figure 2 shows egress conduits 6 and 7 at the monolith ends. The only other means by which recirculated permeate could leave the permeate chambers to the external surface of the membrane element would be for the permeate to pass through the skin of the monolith. Some of the permeate may indeed do so, but the provision of permeate outlet ports is the means by which the great majority of the permeate would leave the membrane element (which is a reason that the amendments state that "*substantially all*" of the recirculated permeate flows substantially through the entire length of the permeate chambers, as opposed to saying that "*all*" of the permeate moves through these channels).

B. Claim 18 is patentable over *Rajnik* in view of *Goldsmith* with *Vane* as further evidence.

The Examiner rejected claim 18 under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,077,436 ("*Rajnik*") in view of U.S. Patent 4,781,831 ("*Goldsmith*") with U.S. Patent Application 2004/0000521 ("Vane") as further evidence.

The Applicant has amended independent claim 18, and respectfully traverses the rejection.

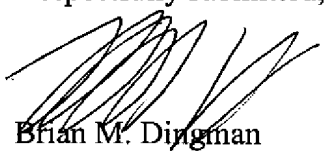
Independent claim 18 has been amended to include the same limitation as independent claim 17, specifically, "where the permeate circulation input port and the permeate outlet port are configured such that substantially all of the circulated permeate flows substantially through the entire length of the permeate chambers without encountering an egress to an external surface of the membrane element." As such, claim 18 is patentable over *Rajnik* and *Goldsmith* for at least the same reasons cited above for claim 17.

## III. Conclusion

For the reasons cited above. The Applicant respectfully submits that all pending claims are patentable over the cited references and requests allowance.

If for any reason this Response is found to be incomplete, or if at any time it appears that a telephone conference with counsel would help advance prosecution, please telephone the undersigned in Westborough, Massachusetts, (508) 898-1501.

Respectfully submitted,



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